

AMENDMENTS TO THE CLAIMS

1.-49. (Canceled)

50. (New) A medical device used in ultrasonic guided positioning comprising:

- a. a fluid container having a discharge end,
- b. a fluid discharge device disposed in connection with the fluid container so as to define a fluid retaining reservoir, the discharge device configured to apply a selected pressure to a fluid in the fluid retaining reservoir for ejecting said fluid from the reservoir through the discharge end,
- c. a first conduit having an entrance end and an exit end and defining a first passage therebetween, the entrance end disposed at the discharge end of the fluid container, the first passage in communication with the reservoir;
- d. a needle having a connector end and a distal tip and defining a needle passage therebetween, the connector end in communication with the exit end of the first conduit, the needle passage in communication with the first passage;
- e. a fluid supply operatively connected to the fluid discharge device selectively applying the selected pressure to the fluid,

wherein the selected pressure moves the fluid through the discharge end of the fluid container and travels a first flow path through the first passage and through the needle passage, for ejection of the fluid at the distal tip at a fluid flow rate suitable for detection by ultrasound.

51. (New) The medical device of claim 50, wherein the fluid includes an echogenic fluid.

52. (New) The medical device of claim 50, wherein the fluid includes a therapeutic agent.

53. (New) The medical device of claim 50, wherein the fluid supply comprises a drive mechanism operatively connected to the fluid discharge device and an actuator for the selective operation of the drive mechanism.

54. (New) The medical device of claim 53, wherein the actuator is manually operable, mechanized or programmable.

55. (New) The medical device of claim 52, further comprising a controller electrically connected to the drive mechanism and to the actuator for selectively applying the selected pressure and thereby control the fluid flow rate.

56. (New) The medical device of claim 50, wherein the fluid supply includes means for adjusting the fluid volume of the fluid ejected at the distal tip.

57. (New) The medical device of claim 50, wherein the fluid container is a syringe and the fluid discharge device is a plunger slidably disposed within the syringe.

58. (New) The medical device of claim 50, further comprising a valve member disposed at a selected position on the first conduit, said valve member having a seal for selectively reducing or stopping throughput of the fluid into or within the first passage.

59. (New) The medical device of claim 58, wherein the valve member is disposed at the entrance end of the first conduit.

60. (New) The medical device of claim 58, wherein the valve member is a one-way valve member for permitting fluid flow into the first passage and to prevent fluid flow in the reverse direction into the discharge end of the fluid container.

61. (New) The medical device of claim 50, further comprising an adaptor for releaseable coupling of the connector end of the needle to the exit end of the first conduit, the adaptor defining an adaptor passage for maintaining communication between the needle passage with the first passage.

62. (New) The medical device of claim 61, wherein said adaptor includes means for releasably coupling a probe to the needle within the needle passage, the adaptor passage and the needle passage sized to permit the insertion of the probe therein, said probe extending beyond said distal tip.

63. (New) The medical device of claim 62, wherein said probe comprises a therapeutic means.

64. (New) The medical device of claim 63, wherein the therapeutic means includes means for applying at least one of radio frequency, microwave heating, cryosurgical freezing, or brachytherapy.

65. (New) The medical device of claim 54, further comprising:

- a. a port connector;
- b. a second conduit having a second entrance end and a second exit end and defining a second passage therebetween, the second exit end disposed at the port connector;
- c. a second connector disposed at the second entrance end for connection for the second entrance to a selected medical component,

wherein the port connector is disposed at a selected portion of the first conduit or at the valve member for permitting communication between the second passage and the first passage.

66. (New) The medical device of claim 65 wherein the selected medical component includes:

- a. a second fluid container having a second discharge end,
- b. a second fluid discharge device disposed in connection with the second fluid container so as to define a second fluid retaining reservoir, the second discharge device configured to apply a second selected pressure to a second fluid in the second fluid retaining reservoir for ejecting said second fluid from the second reservoir through the second discharge end,
- c. a second fluid supply operatively connected to the second fluid discharge device for selectively applying the second selected pressure to the fluid,

wherein the second selected pressure ejects the second fluid through the second discharge end of the second fluid container and travels a second flow path through the second passage, through to one of the valve member or to the selected portion of the first passage, and through the needle passage, for ejection at the distal tip at a second flow rate.

67. (New) The medical device of claim 66, wherein the second fluid supply comprises a second drive mechanism operatively connected to the second fluid discharge device and a second actuator for the selective operation of the second drive mechanism.

68. (New) The ultrasonically enhanced device of claim 67, wherein the second actuator is manually operable, mechanized or programmable.

69. (New) The medical device of claim 66, further comprising a second transducer for sensing the second selected pressure applied to the second fluid and for outputting an electrical signal reflective of the second selected pressure for input to the controller.

70. (New) The medical device of claim 66, further including a switch configured for switching actuation of the first fluid supply and the second fluid supply.

71. (New) The medical device of claim 70, wherein the second fluid is a therapeutic agent.

72. (New) The medical device of claim 71, wherein the therapeutic agent includes one or more of:

- a. a liquid drug,
- b. a solid drug suspended in a fluid,
- c. a drug eluting microsphere, or other acoustically activated drug delivery system, suspended in a fluid,
- d. a radioisotope labeled drug,
- e. a radioisotope labeled particle,
- f. an imaging system contrast agent for imaging systems including CT scans, MRI, ultrasound or X-ray.

73. (New) The medical device of claim 65, wherein the selected medical component includes a vacuum source for use in tissue aspiration for performing a biopsy.

74. (New) The medical device of claim 65, wherein the selected medical component includes a vacuum source for use in fluid or material drainage.

75. (New) The medical device of claim 65, wherein the medical component includes a catheter for supplying fluids.

76. (New) The medical device of claim 50, further comprising an ultrasound transducer, or multi-transducer array, supported in the housing and in contact with the first conduit in communication with the first passage, the ultrasound transducer or array for transmitting an ultrasound pulse or continuous ultrasound through the needle passage.

77. (New) The medical device of claim 50, further including an adaptor for supporting an ultrasound transducer probe, or multi-transducer probe array, the ultrasound

transducer probe or array for transmitting an ultrasound pulse or continuous ultrasound through the needle passage.

78. (New) An ultrasonic guided positioning system for detecting a medical device, comprising:

- a. a medical device of claim 50
- b. an ultrasound transducer for transmitting and receiving pulses;
- c. an ultrasound display; and
- d. a system controller electrically connected to each of components (a) to (c),

the system controller controlling, detecting or displaying the location of the distal tip of the needle on the ultrasound display.

79. (New) A ultrasonic guided positioning method for detecting a medical device, comprising:

- a. dispensing a fluid from a distal tip of a needle of a medical device, the fluid having a selected flow rate for detection by a medical device, the device having:
 - i. a fluid container having a discharge end,
 - ii. a fluid discharge device disposed in connection with the fluid container so as to define a fluid retaining reservoir, the discharge device configured to apply a selected pressure to a fluid in the fluid retaining reservoir for ejecting said fluid from the reservoir through the discharge end,
 - iii. a first conduit having an entrance end and an exit end and defining a first passage therebetween, the entrance end disposed at the discharge end of the fluid container, the first passage in communication with the reservoir;
 - iv. a needle having a connector end and a distal tip and defining a needle passage therebetween, the connector end in communication with the exit end of the first conduit, the needle passage in communication with the first passage;
 - v. a fluid supply operatively connected to the fluid discharge device for selectively applying the selected pressure to the fluid, whereby the selected pressure moves the fluid through the discharge end of the fluid container and travels a first flow path through the first passage and through the needle passage,

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for ejection at the distal tip at a fluid flow rate suitable for detection by ultrasound;

- b. transmitting an ultrasonic pulse from an ultrasound transducer;
- c. receiving the ultrasound pulse by the ultrasound transducer; and
- d. detecting the fluid ejected from the distal tip.